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10/821,353	04/09/2004	Candice Hellen Brown Elliott	08831.0066	1191

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EXAMINER

SHENG, TOM V

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/821,353	Applicant(s) BROWN ELLIOTT ET AL.	
	Examiner Tom V. Sheng	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-19 is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6-11 and 20-24 is/are rejected.
- 7) ☒ Claim(s) 3,5,12,13,25 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Objections

1. Claims 1 and 10 are objected to because of the following informalities:

As for claim 1, line 4, “;” should be changed to “,” and line 12, “;” should be appended to end of line.

As for claim 10, line 2, “temperature” should be changed to “color temperature” as the control is on color temperature, not temperature of the backlight.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 21 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As for claim 21, it is unclear no how to utilize the invention when only the aspect ratio of subpixels in the second display is provided. The aspect ratio of subpixels in the first display should also be provided. Also, are the two displays of the same size or different sizes?

As for claim 22, it is unclear how this figure of merit of 60% is derived and how does this further facilitate the make and use of the invention, as described in claim 21. The specification is unclear on the concept and derivation of FOM. The Examiner

sincerely requests the Applicant to explain the concept and derivation to facilitate the prosecution.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 4, 6 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Choi et al. (US 2004/0195963 A1), hereinafter Choi.

As for claim 1, Choi teaches a display (OLED display; fig. 2) substantially comprising a subpixel repeating group, said subpixel repeating group comprising one of a first group, said grouping comprising: R B G

G W R (fig. 3C);

wherein W is substantially white, G is substantially green, R is substantially red, and B is substantially blue (page 4, paragraph 42; the 2x3 lattice uses two red, two green, one green and one white subpixels).

As for claim 4, the R, G, B and W subpixels (fig. 3C) have the same dimensions and area, thus subpixel repeating group does have colored and white subpixels comprising substantially the same aspect ratio (width : height).

As for claim 6, all the subpixels (fig. 3C) are rectangular in shape.

As for claim 11, each color filter is by nature a narrow bandpass filter.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Choi.

As for claim 10, Choi's display is an OLED display. However, it is well understood that the teaching of subpixel repeating group is equally applicable in LCD. Moreover, it is inherent in LCD to have a backlight.

However, Choi does not teach, as claimed, wherein the color temperature of said backlight adjusted such that a balanced white color is displayed with all subpixels on fully (thus providing a white display). Official Notice is taken of both the concept and advantages in adjusting the backlight's color temperature in the factory or in the field is well known and expected in the art. It would have been obvious to perform this adjustment since white balance is a critical aspect on color correct display.

8. Claims 2, 8, 9 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi as applied to claim 1 above, and further in view of Masaki et al. (US 5,757,452), hereinafter Masaki.

As for claim 2, the subpixel areas of different embodiments (fig. 3A-3C) taught by Choi have the same size. Thus, Choi does not teach wherein further the white subpixels are substantially of smaller size than the colored subpixels.

Masaki also teaches display utilizing a repeating subpixel group. In particular, Masaki teaches that it is preferable to have the R, G and B subpixels with the same area while the white subpixel with a smaller area that provides better visibility with respect to the human eye.

Therefore, it would have been obvious to one of ordinary skill in the art to modify the subpixel group (fig. 3C) with a smaller W subpixel, thus providing better viewing of the display.

As for claims 8 and 23, Choi's display is an OLED display. However, it is well understood that the teaching of subpixel repeating group is equally applicable in LCD. Masaki teaches in a liquid crystal panel where each subpixel is made with a color filter. In order to shield the light trying to pass between the color filters, light shielding layers such as section 5, 9-1 and 9-2 are used. Specifically, section 9-1 is used to shield light between neighboring pixels and section 9-2 is used to shield light between subpixels within each pixel (fig. 3B, column 4, lines 55-65). One of ordinary skill in the art would recognize that the sections 9-1 and 9-2 correspond to claimed black matrix and is substantially above the disinclination region (light leaking area).

Therefore, it would have been obvious to incorporate a black matrix above the disinclination region for the subpixel repeating groups of a liquid crystal display, in order to provide a sharper display.

As for claims 9 and 24, inherently for a brighter subpixel, a bigger black matrix corresponding to it is needed in order to properly shield its light from interfering with other subpixels or neighboring pixels, or vice versa.

Claim 20 is rejected per rejections of claims 1, 2 and 10.

As for claim 21, assuming that the subpixels of the second display are smaller than the subpixels of the first display, the brightness requirement of the backlight is correspondingly reduced in proportion, to achieve the same display brightness.

As for claim 22, with the addition of a white subpixel for each pixel, inherently the figure of merit would be lower.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Choi as applied to claim 1 above, and further in view of Liu (US 6,914,649 B2).

As for claim 7, Choi teaches a first repeating subpixel group that repeats itself over the display panel. Choi does not teach, as claimed, a second repeating subpixel group that is a mirror image, symmetrical transformation, or hex grid transformation, of the first repeating subpixel group.

Liu teaches a display of sub-pixel groups. In particular, Liu teaches that each sub-pixel group (also called pixel array) has an adjacent sub-pixel group that is a mirror image of the previous sub-pixel group (fig. 4; column 3, lines 14-47). Liu further teaches that, by manufacturing the sub-pixel groups in this fashion, each color also "forms" its sub-pixel groups. Subsequently, the adhesion strength of the sub-pixels is increased to avoid peeling from the substrate (column 3, line 48 through column 4, line 10).

Therefore, it would have been obvious, based on Liu's teaching, to implement mirror image type of second repeating subpixel group into Choi's display panel, for the purpose of enhanced product reliability.

Allowable Subject Matter

10. Claims 14-19 are allowed.

11. Claims 3, 5, 12, 13, 25 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: none of the prior art of record teaches the limitations, "wherein said colored subpixels comprise substantially a first aspect ratio and said white subpixels comprise a second aspect ratio" of claim 3, "wherein the white subpixels are vertically displaced substantially 180 degrees with respect to the colored subpixels" of claim 12, the repeating subpixel group in claim 14, the repeating subpixel group in claim 17, "wherein said subpixel repeating group comprises a hex grid of colored subpixels" of claim 25, and "wherein said white subpixels are substantially vertically displaced from said colored subpixels" of claim 26. Claims 5 and 13, 15-16, and 18-19 are dependent on claims 3, 14, and 17, respectively.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom V. Sheng whose telephone number is (571) 272-7684. The examiner can normally be reached on 9:00am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tom Sheng

AMR A. AWAD
SUPERVISORY PATENT EXAMINER

A handwritten signature in black ink, appearing to read "Amr Awad", with a stylized flourish extending from the end.